STATUS OF SLENDER COLLOMIA
(Collomia tenella)
IN BRITISH COLUMBIA

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"In cases where a Wildlife Working Report or Bulletin is also a species' status report, it may contain a status recommendation from the author. The Province, in consultation with experts, will determine the official conservation status and consider official legal designation. The data contained in the status report will be considered during those processes."

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EXECUTIVE SUMMARY

Species information

Collomia tenella is an ascending to spreading, freely branched, annual, taprooted herb up to 15 cm tall. The leaves are alternate, linear, entire, 1 to 5 cm long and 1.5 mm wide. Flowers are single or in pairs at the branch tips, in the leaf axils, or at the forks of the branches. The pinkish to white corollas are five-lobed. The calyces, which bow out and often form purplish knobs at the sinuses, have 1 to 2 mm long, triangular teeth. The seeds become sticky when moistened.

Distribution

C. *tenella* ranges from southwestern British Columbia, south in the western United States to Wyoming, Utah, Nevada, and Oregon. In Canada, *C. tenella* is known only from the Princeton area in southwestern British Columbia.

Habitat

C. tenella occurs in the southern interior of British Columbia along the Similkameen River valley in the Interior Douglas-fir biogeoclimatic zone. Climatic conditions in this region are continental, characterized by hot, dry summers, a fairly long growing season, and cool winters.

Within this region, *C. tenella* occurs on eroded, southeast-facing sections of a steep, sandy ridge. The soils consist of fine-textured sands. The eroded sections of the slopes are sparsely vegetated with about 20percent cover. The vegetation consists of a variety of herbs and shrubs, including *Balsamorhiza sagittata* (arrow-leaved balsamroot), *Astragalus miser* (timber milk-vetch), *Bromus tectorum* (cheatgrass), and *Pseudoroegneria spicata* (bluebunch wheatgrass). Scattered Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) also occur on the ridge.

Biology

No information on *C. tenella* is available in the literature. Because it is an annual plant it may not occur on a yearly basis if environmental conditions are not favourable. Other annual members of the genus are self-compatible and self-pollinating. Pollination vectors are probably animals because seeds are sticky when moistened.

Population sizes and trends

The single population of *C. tenella*, consisting of only a few plants, was discovered in 1997 in the Similkameen River valley, west of Princeton, British Columbia. A recent survey of the site in 2002 by the authors failed to locate any plants.

Limiting factors and threats

Threats to the persistence of *C. tenella* in British Columbia include housing developments, road-building, off-road recreation vehicle use, and the possibility of further advancement of weeds into the habitat as has occurred in adjacent habitat types.

Special significance of the species

The steep, southeasterly sections of the sandy ridges in which *C. tenella* grows are relatively infrequent in the Princeton area and are not significantly invaded by introductions. This population of *C. tenella* is at the northern extent of its geographic range and may represent a pool of genetically and morphologically divergent characteristics that may have an evolutionary and ecological significance for the species as a whole. The protection of genetically distinct peripheral populations may be important for the long-term survival of the species.

Existing protection or other status designations

Provincially, *C. tenella* has been ranked as S1 by the Conservation Data Centre and appears on the British Columbia Ministry of Sustainable Resource Management red list (Douglas *et al.* 2002a). This is the most critical rank that can be applied to species at the provincial level.

Currently no specific legislation protects rare and endangered vascular plants in British Columbia that have been given this critical rank. The population of

C. tenella in British Columbia, however, may be afforded some protection against certain types of property development because they occur on private property that falls within the Agricultural Land Reserve; however, conversion to intensive uses is not prohibited. The Agricultural Land Reserve status also subjects the properties to the *Soil Conservation Act of British Columbia*, which prohibits removing soil or placing fill on land in the Agricultural Land Reserve. As a result, in the absence of active stewardship, populations of rare plants on these private lands are not secure.

Summary of status report

Suitable habitats for *C. tenella* are infrequent in the southern interior of British Columbia, and such habitats are threatened by housing developments, road-building, recreational vehicle use, and the encroachment of weeds. The occurrence of *C. tenella* at the northern extent of its range may represent a significant genetic resource for the species. An absence of specific legislation in British Columbia to protect rare plant populations puts *C. tenella* at high risk in Canada.

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SPECIES INFORMATION

Name and Classification

Collomia tenella A. Gray
Slender Collomia
Polemoniaceae Phlox family
Angiosperm

Description

Slender Collomia, *Collomia tenella* A. Gray[1] is member of a genus of about 13 species found in North and South America (Hitchcock *et al.* 1959). Four species occur in British Columbia and Canada (Scoggan 1979; Pojar 1999; Douglas *et al.* 2002b). *C. tenella* was first recorded in Canada by Douglas *et al.* (1998a).

C. tenella is an ascending to spreading, freely branched, annual, tap-rooted herb up to 15 cm tall (Pojar 1999; Figure 1). The leaves are alternate, linear, entire, 1 to 5 cm long, and 1.5 mm wide. Flowers are single or in pairs at the branch tips, in the leaf axils, or at the forks of the branches. The pinkish to white corollas are five-lobed. The calyces, which bow out and often form purplish knobs at the sinuses, have 1 to 2 mm long triangular teeth. Fruits are capsules with 1-seeded chambers; seeds become sticky when moistened.

DISTRIBUTION

Global Range

C. tenella ranges from southwestern British Columbia, south in the western United States to Wyoming, Utah, Nevada, and Oregon (Hitchcock *et al.* 1959; Figure 2).

Canadian Range

In Canada, *C. tenella* is known only from the Princeton area in southwestern British Columbia (Figure 3; Pojar 1999; Douglas *et al.*, 1998a, 2002a, b).

HABITAT

Habitat Requirements

C. tenella occurs in the southern interior of British Columbia along the Similkameen river valley in the Interior Douglas-fir biogeoclimatic zone (Hope *et al.* 1991). Climatic conditions in this region are continental, characterized by hot, dry summers, a fairly long growing season, and cool winters. A rainshadow effect prevails in this area due to the presence of the Coast-Cascade Mountains to the west

Within this region, *C. tenella* occurs on eroded, steeply-sloped, southeast-facing sections of a sandy ridge. The ridge, formed by fluvial processes during recent glaciation, consists of fine-textured sands. The eroded sections of the slopes are sparsely vegetated with about 20percent cover. The vegetation consists of a variety of herbs and shrubs including *Balsamorhiza sagittata* (arrow-leaved balsamroot), *Astragalus miser* (timber milk-vetch), *C. linearis* (narrow-leaved collomia), *Phacelia linearis* (thread-leaved phacelia), *Lupinus sericeus* (silky lupine), *Amelanchier alnifolia* (saskatoon), *Linaria genistifolia* ssp. *dalmatica* (Dalmation toadflax), *Bromus tectorum* (cheatgrass), and *Pseudoroegneria spicata* (bluebunch wheatgrass).

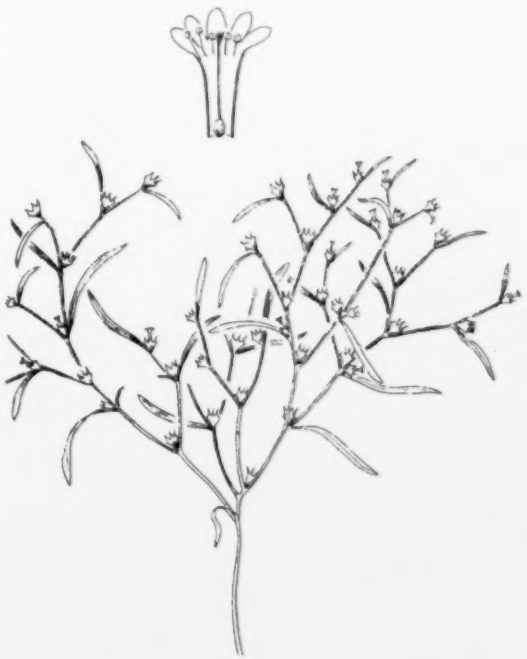

Figure 1. Illustration of *Collomia tenella* (Line drawing in Douglas *et al.* 1999b, 2002b).

[1] Taxonomy and nomenclature follows Douglas *et al.* (1998b, 1999a, 1999b, 2000, 2001).

Scattered Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) also occur on the ridge.

Trends

Habitat trends depend mainly on development activities at the sites. In the absence of major changes due to development, noxious weeds such as *Linaria genistifolia* and *Bromus tectorum* could increase at the site. The habitat could also be invaded by other introductions that are already well-established in surrounding areas.

Protection/Ownership

The population of *C. tenella* in British Columbia occurs on private property.

BIOLOGY

General

No information is available on the biology and ecology of *C. tenella* in British Columbia. Because it is an annual plant it may not occur on a yearly basis if environmental conditions are not favourable.

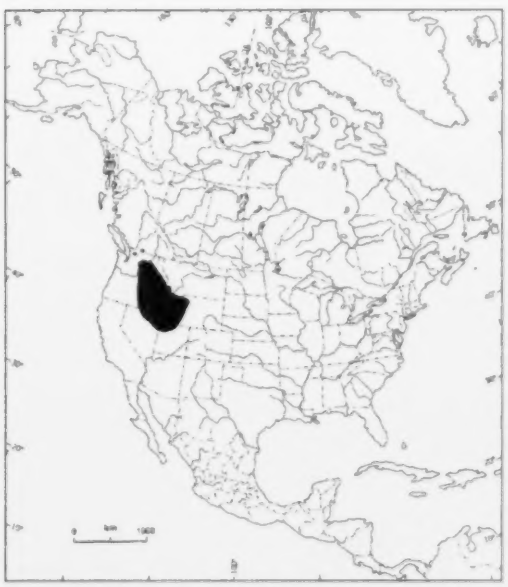

Figure 2. Distribution of *Collomia tenella* in North America.

Reproduction

Other annual members of the genus are self-compatible and self-pollinating (Wilken 1993).

Survival

Unknown.

Physiology

Unknown.

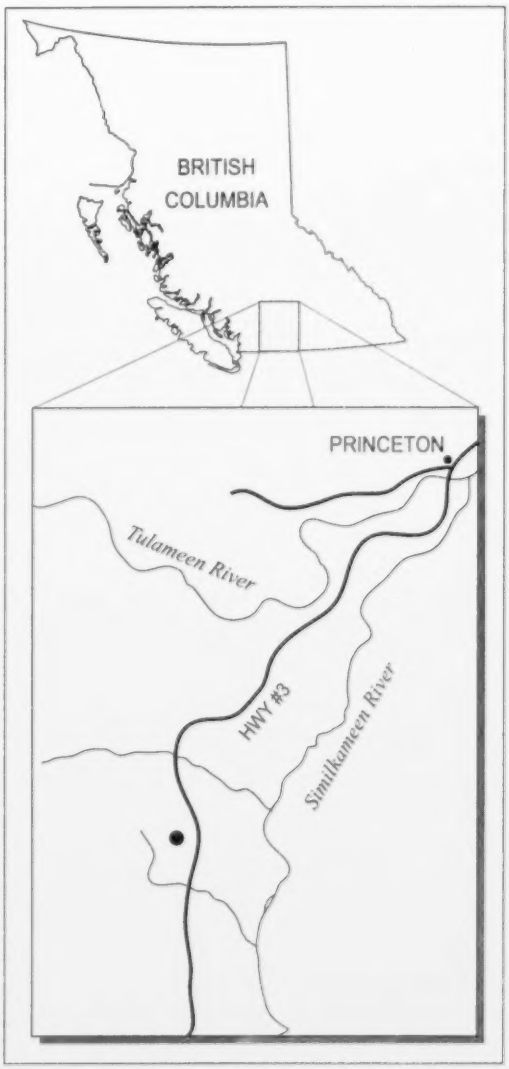

Figure 3. Distribution of *Collomia tenella* in British Columbia.

Movements/Dispersal

Seeds are sticky when moistened, which supports animal dispersal.

Nutrition and Interspecific Interactions

Unknown.

Behaviour/Adaptability

Unknown.

POPULATION SIZES AND TRENDS

The single population of *C. tenella*, consisting of only 10 plants covering 5 m^2, was discovered in 1997 in the Similkameen River valley, west of Princeton, British Columbia (Figure 3). In 2000, this population had been reduced to a single plant, a decrease of 90percent. A recent survey of the site in 2002 by the authors failed to locate any plants. It is likely that this annual will reappear in the future when environmental conditions are favourable. Because the habitat for this species in British Columbia is extremely limited, it is not likely that many more sites will be found.

Short- and long-term trends for these populations are unknown but can be expected to vary markedly due to differences in yearly seed germination and seedling success. Conditions on the sandy ridge may or may not be ideal from year to year because of normal climatic fluctuations.

LIMITING FACTORS AND THREATS

The greatest threat to populations of *C. tenella* are road or housing developments. The southern interior of British Columbia has recently seen an increase in housing projects and the Princeton area is no exception. During development activities, plants could easily be extirpated through sand removal. Furthermore, suitable habitats for *C. tenella* are probably infrequent in the southern interior of British Columbia; therefore, opportunities for colonization are probably limited.

Weed control activities also constitute a minor potential threat to populations, although weeds are not a major threat to *C. tenella* specifically. Under the *Weed Control Act*, an occupier must control noxious weeds growing or located on land and premises, thus marginally specific chemical weed control substances that kill broad-leaved plant species would probably kill *C. tenella*. Noxious weeds such as *Linaria genistifolia* and *Bromus tectorum* occur in the habitat occupied by *C. tenella* and could increase. In addition, a variety of other introductions threaten the long-term ecological integrity of the surrounding landscape and may invade the habitat of *C. tenella*, as they have in other adjacent habitat types.

Recreational off-road vehicle use could also present a threat due to the nature of the *C. tenella* habitat. The steep and relatively unstable slopes are highly susceptible to disturbance, presenting a desirable challenge for these vehicles.

SPECIAL SIGNIFICANCE OF THE SPECIES

Steep, southeasterly facing sandy ridges like the one on which *C. tenella* grows are relatively infrequent in the Princeton area and are not significantly invaded by introductions, unlike much of the surrounding habitat. Therefore, the site represents a relatively pristine community within a more extensively disturbed landscape.

The population of *C. tenella* is at the northern extent of its geographic range. Peripheral populations are often genetically and morphologically divergent from central populations and may have an evolutionary and ecological significance out of proportion to the percentage of the species they represent (Mayr 1982; Lesica and Allendorf 1995). The protection of genetically distinct peripheral populations may be important for the long-term survival of the species as a whole (Lesica and Allendorf 1995).

EXISTING PROTECTION OR OTHER STATUS

International Status

Globally, *C. tenella* has a rank of G4? indicating that in most of its range the plant is apparently frequent. In most of its range in the western United States, *C. tenella* is common. It is considered possibly imperiled or imperiled in both Utah and Wyoming (S2? and S2 respectively; NatureServe 2001).

National and Provincial Status

Nationally, *C. tenella* has a rank of N1. Provincially, *C. tenella* has been ranked as S1 by the Conservation Data Centre and appears on the British Columbia Ministry of Sustainable Resource Management red list (Douglas *et al.* 2002a). This is the most critical rank that can be applied to species at the provincial level and indicates that the species is "critically imperiled because of extreme rarity (typically five or fewer occurrences or very few remaining individuals) or because of some factor(s) making it especially vulnerable to extirpation or extinction."

Currently no specific legislation protects rare and endangered vascular plants in British Columbia that have been given this critical rank. In the absence of federal or provincial rare species legislation or active stewardship, populations of rare plants on private lands are not secure. However, the private property on which *C. tenella* occurs does fall within the Agricultural Land Reserve and is therefore subject to the *Agricultural Land Commission Act of British Columbia.* This provincial land-use zone, in which agriculture is recognized as the primary land use, provides some protection against the population being extirpated by certain types of property development. Conversion of agricultural lands to intensive uses inconsistent with the habitat requirements of *C. tenella,* however, is not prohibited. The Agricultural Land Reserve status also subjects the property to the *Soil Conservation Act of British Columbia.* The *Soil Conservation Act* prohibits removing soil or placing fill on land in the Agricultural Land Reserve, except with permission from the Provincial Agricultural Land Commission.

SUMMARY OF STATUS REPORT

1. Only one extant population of *C. tenella* is known in the Princeton area of British Columbia, thus the loss of the one site results in the loss of the species from British Columbia and Canada.
2. Suitable habitats for *C. tenella* are probably infrequent in the southern interior of British Columbia and therefore opportunities for colonization are probably limited. The population experienced a 90percent decrease from 1997 to 2000 and was not found at the site in 2002.
3. Road-building, housing developments, and recreational off-road vehicle use threaten the continued persistence of this species in Canada. In addition, weeds may have an even greater impact in this habitat in the future than they have in adjacent habitats.
4. In the absence of federal or provincial rare species legislation or active stewardship, populations of rare plants on private lands are not secure.
5. The population of *C. tenella* in British Columbia is at the northern extent of its range and may represent a population that is genetically distinct and important for the long-term survival and evolution of the species. The result of not protecting peripheral species at the margins of their range could be a significant and irreversible loss of Canada's genetic resources.

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COLLECTIONS EXAMINED

Herbarium specimens housed at the Royal British Columbia Museum in Victoria (V) were viewed and verified.